

GOBI REGIONAL ECONOMIC GROWTH INITIATIVE

REPORT ON VEGETABLE AND DAIRY PRODUCT MARKET ASSESSMENT IN THE GOBI REGION

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One. Foreword

The research was conducted on the basis of contract No 03/04/27 concluded with the Mercy Corps Mongolia (hereinafter is referred to as Customer) and in accordance with research plan.

We met a number of local residents in Dundgovi (09 November, 2003-12 November, 2003), Umnugovi (13-15 November, 2003) and Uvurkhangaï (17-19 November, 2003) aimags, including program officers of Representative Offices in three aimags, officers of Aimag Agriculture Department, Expert Monitoring Office and Tax Office, officers of World Vision office, members and heads of cooperatives, herders, vegetable growers and businesses. We led discussions with them and had our questionnaire forms (40pcs) filled out by them.

Apart from survey data, information from regional Green, White revolution subprogram reports, research results by related organizations and statistical data were used in the report.

The research report was written in two parts dedicated to vegetable and dairy sectors. However, answering to specific topics that needed clarification for Customer, we provided information on situation in each aimags together in one place to enable the Customer a possibility for comparison.

??? or three question marks in the part describing key consumers denote the number of consumers/organizations which could not be determined by the survey.

Two. RESULTS OF VEGETABLE MARKET RESEARCH

2.1. Market mechanism

2.1.1. Key players at this market at the aimag and soum levels and their roles

2.1.1.1. Dundgovi aimag

Customers: Aimag has 52,000 inhabitants living in 12,400 households. Some 11,307 out of the total number of household do not grow vegetables though. Some 3,000 households reside at the aimag center and a part of these households, which enjoy a good purchasing capacity, can be considered as active users of vegetables. According to the Green revolution subprogram research, 1093 households in the aimag are engaged in vegetable growing. Also a few households, who are employed at the soum center, and some herders, who live in areas adjacent to soum center and enjoy relatively good purchasing capacity, buy vegetables in a small quantity. Mr Batbold, Chairman of the Goviin Zun cooperative, traveled in soums and experimented to barter 500 kg of vegetables for animals and dairy products the last fall. Herders were keen to purchase vegetables and Batbold's experiment showed that there was a good opportunity to open a new market segment that brings the vegetable market accessible to herder households with enough purchasing capacity out of 8307 households that live in the soum and do not grow vegetables.

At the aimag level, there are the following organizations, which can be considered as main customers of the aimag vegetable market. They are hospitals with in-patient service (17), secondary schools with dormitories (18), kindergartens (20), canteens (28), tourist camps (???), ger camps (???), large mining camps (???) and military bases (???). As of soums, at least one each of these organizations except tourist camp, ger camp, large mines and military bases, are located in each soums of the aimag. These organizations are main consumers of vegetables at the soum level.

There are many households that grow vegetables to meet their home consumption for six months only and they are considered as households, which have no enough incomes to purchase additional vegetables to meet their household consumption for the rest of the year.

Retail traders: During our research in aimag center, we located a total of six vegetable retail trading points at the aimag center, including two stalls at the Mandal Khuree food market and one each at Talst

Uul, Dulguun, Undram and a 24-hour shop. The same vegetable retail points have sold vegetables for years and there has not been any change in number and location of vegetable retail points over the years. Retail traders told that sometimes they are in shortage of vegetables due to failure in procurement. All of them purchase their vegetables from Bars Wholesale Center in UB. The Dulguun shop purchased some tomatoes from Mr Damba, a local vegetable grower, this year after the harvest season and some *fennel* (a Gobi plant specie that is used as a flavor for cooking) collected by Goviin Zun cooperative for reselling.

Some shops located at the aimag center and soums centers on the way to UB procure vegetables in small amount from Bars Wholesale center in UB and Ikh Khaikhan Mandal LLC Wholesale Center at the aimag center. In other words, there is a poor supply of vegetables at the soum level. This situation is directly dependent on purchasing capacity of soum residents and level of their consumption.

Wholesale traders: There is an only wholesale vegetable seller at the aimag center. That is Ikh Khaikhan Mandal LLC, which sells vegetable on wholesale and retail basis through its four shops. This company purchases vegetables at Bars Wholesale Center in UB and resells the vegetables at aimag center at the lowest local rate. Customers of aimag centers and from soums adjacent to aimag center purchase vegetables from those four shops.

Some individuals from UB, Darkhan and Erdenet happened to bring one or two trucks of vegetables each to sell their stuff at the local market a few times during the harvest season.

Ikh Hairhan Mandal LLC experimented to grow some potatoes, turnips and carrots in a spot near the aimag center in 2002. The company did not succeed in growing vegetables under some circumstances, including drought in 2002, high expenses spent on fencing around the spot, use of water pump that burns large amount of diesel fuel, and the lack of experience which consequently led towards failure in harvesting a good yield.

Mr Tsolmon, Executive Director of the company, visited a deep well site in Bornuur soum, Tuv aimag last summer. The deep well was equipped with a Japanese-made pump using vacuum tube technology. After his visits to Tuv aimag, Mr Tsolmon planned to construct similar pump with own resources and install the pump at his well to save some of expenses. He also is going to invite two vegetable growers from Tuv aimag to work on a spot of 5 hectares for the growing season next year.

This deep-well pump use neither fuel nor electric power to operate it. It needs some expenses to install it though. It has a pretty simple design consisting of two steel containers of different dimensions and incoming and outgoing water pipes. Some depreciation such as deformation of water containers may occur to parts of pump.

We consider that if this new technology, which does not use piston or electric power, could be an effective input in the Gobi conditions, where the production cost highly increases due to the operation of irrigation facilities that depend on consumption of fuel and electric power.

Households growing vegetables: Some 1,093 households in all soums, except Undurshil grow vegetables. Most of them grow vegetables to meet their household consumption for six months only.

The World Vision selected some 350 households with low purchasing capacity out of 750 households in 7 soums in 2002 and provided them with trainings, seeds, tools, green-house construction materials free of charge and financial assistance to encourage those households to grow vegetables to meet their household needs for at least six months a year.

Residents, cooperatives and partnerships, who started growing vegetables with assistance from WV, were able to harvest 180.4 tons of vegetables in 2003, including 60.4 tons harvested by individuals.

The Green Revolution Program activities launched by Mongolian Government in 1997 covered 167 households in Dundgovi at the initial stage of implementation of this Program. Vegetable growing was a completely new practice for most of those households. The Green Revolution Program was the initiator

of the vegetable growing movement in Dundgovi and now 10% of the aimag population is capable to meet their household needs of vegetables for six months a year.

As of this aimag, no local soum resident grows vegetables excess than their own household consumption.

There are a few vegetable growers at the aimag center such as Messrs Damba and Mijee, who can afford selling vegetables excess of their home consumption at the aimag market. They sell some 4-5 tons of potatoes, tomatoes and fennel during the harvesting season. Mr. Damba's annual production (planting and harvesting) expenses amount to 1 million tugrug, and it comprises the cost of 5 tons of vegetables sold on the market (200 tug per 1 kg). Mr. Damba, same as other vegetable producers, sells the surplus leaving some part of the harvest for personal consumption.

Vegetable growing enterprises: It is said that a total of 14 businesses in 7 soums grow vegetables throughout the aimag. All of them except Logiin Govi LLC are newly formed cooperatives and partnerships. Goviin zun cooperative, which was formed with the assistance from the World Vision, harvested 24.7tons or 6% of the total amount of 394.3 tons of vegetable harvested in the aimag in 2003.

This cooperative has two underground storages with capacity of storing 10 and 5 tons of vegetables respectively. It stores harvested vegetables in two storages and the sells the excess vegetables at the aimag center for cash and barter vegetables with herders living out in the field for animals and dairy products. Cooperative members preserved 200 jars of cucumber and salad with different vegetables and were able to sell a jar of preserved cucumber and salad for MNT600 and 800 respectively.

Main species of vegetables grown in Dundgovi aimag are potato, turnips, red beet, carrot, tomato, and cucumber. Vegetable growers also grow fennel, onion, garlic and pepper in a small amount. Some of these flavors are sold very well on a seasonal basis. For example: fennel during the Mongolian New Year and garlic are sold mainly during the spring, when animals are tired and in a poor shape.

Aimag residents grew vegetables in 53.5 hectares and harvested 394.3 tons of vegetables in 2003.

Problems facing vegetable growers in Dundgovi aimag: Although soil condition is not considered unsound, water source is mainly deep wells. Water is pumped out from a depth of 100-150meters. This causes huge additional expenses. Water flow in natural water sources like streams and springs depend on seasonal weather conditions and precipitation. There is area limited areas for growing vegetables due to distribution of natural water sources.

Government organizations and services: Food and Agriculture Department, Expert Monitoring Service, and Tax Office.

Food and Agriculture Department has provided some trainings, promotion and seed supply activities under the auspices of the Government Green Revolution Program. Aimag Government provides a funding worth MNT3 million consisting of central and local government funds to implement the Green Revolution program activities annually.

Expert Monitoring Service undertakes sanitation and health monitoring on activities of vegetable traders. The Service indeed has no capacity to provide monitoring on products' quality and standards.

Tax Office collects a monthly tax worth MNT6,000 from vegetable traders.

Other organizations: One organization, namely the World Vision has provided a considerable assistance for local vegetable growers. It initially selected 750 households for cooperation in 2002. Then in 2003 WV selected 350 poor households out of earlier selected 750 households for involving them in a vegetable growing project and assisted them in growing vegetables for meeting their household consumption for six months. As a result of WV project efforts, some 6% of aimag population became able to produce vegetables to meet their household needs for six months.

2.1.1.2. Umnugovi aimag

Customers: There are 46858 residents living in 11633 households in Umnugovi aimag. Some 9994 households do not grow vegetables. There are 3545 households in aimag center and 3000 of them do not grow vegetables, whereas 6994 households out of 8088 residing soums are not vegetable growers.

Households, which enjoy a good purchasing capacity but do not grow, of both aimag center and soum centers can be considered as active users of vegetable. We can learn from example of Dundgovi aimag that herders with good purchasing capacity are in need of purchasing and using vegetables.

At the aimag level, there are the following organizations, which can be considered as main customers of the aimag vegetable market. They are hospitals with in-patient service (17), secondary schools with dormitories (16), kindergartens (20), canteens (27), hotels (24), military bases (3), tourist camps (13), ger camps (240), and a large mining camp. As of soums, at least one each of these organizations except tourist camp, ger camp, large mines and military bases, are located in each soums of the aimag. These organizations are main consumers of vegetables at the soum level.

Number of military bases, tourist camps, ger camps and large mine was known to us as of Umnugovi aimag. They are the same main consumers of vegetable markets in other aimags as well.

Another good opportunity for growing the needs of vegetable market in the Gobi region is four tourist camps and the Oyutolgoi mining site. Some four mining companies employing 500 workers are operating in Oyutolgoi mining site.

Based on the above-mentioned data, for Dundgovi aimag specifically households that grow vegetables were not classified as main customers for the vegetable market.

Retail traders: There are 16 point, including 15 stalls at the Bayan-Uul Vegetable and Meat Market and the Sukhbaatar's Vegetable and Dairy Shop, where vegetables are sold in retail. Such shops as Tsogjavhlan, Mazaalai, Buyan 1 and 2 seem to sell vegetables sometimes either after the harvest or when they procure vegetables from Ulaanbaatar.

Some residents, who grow vegetables, sell vegetables in small quantity at the Bayan Uul Market after the harvesting season.

Owners of 13 stalls at vegetable market and Mr Sukhbaatar, owner of the Vegetable and Dairy Shop, grow some vegetables for sales. Owners of another two stalls do not grow own vegetables but purchase vegetables from wholesalers for reselling.

There are 14 households owning vegetable shops and growing vegetables at the aimag center. They include Sukhbaatar, Mongoljav, Dolgorsuren, Sainzaya and Odsuren who are considered having grown vegetables in a large amount at the aimag and indeed grow vegetables in up to 2 hectares. The rest vegetable growers grow vegetables in one hectare as usual.

Having finished selling their vegetables, residents, who grow vegetables in small amount, purchase vegetables from those who grow vegetables in large amount or those who store their vegetable for selling it in winter, and resell it from November through to January and February next year. They buy vegetables in UB and resell them at the aimag center from March through to August.

As of those, who grow vegetables in large amount, they sell their vegetables from August through to February and March of the following year and resell vegetables purchased by them in UB for the rest of the year.

As residents of all soums of Umnugovi aimag grow vegetables, local residents can sell vegetables of own soum, from other soums and even UB.

Wholesale traders: Wholesale traders in Umnugovi can be divided into the following categories:

- Residents, who grow vegetables in large amount, sell vegetables in wholesale at the local market from August through to February of the following year.

- Residents, who grow vegetables for sales in small amount of up to 5 tons, sell their vegetables in wholesale during the harvest season.
- There are some cases that local retailers, who procured vegetables in UB in large amount, may sell a small part of their vegetables in wholesale, if they are in lack of sufficient underground storage to store all vegetables they had bought in UB.

Otherwise, there is no individual or organization running vegetable wholesale business at the aimag center. The main location of vegetable wholesale trade is the aimag center.

Households growing vegetables: A total of 1,639 households grow vegetables throughout Umnugovi aimag. Only 645 households grew vegetables in 2001 in Umnugovi. Nowadays 7% of entire aimag residents grow vegetables for own consumption or for sales. Those households can be classified as follows:

- Meet own household needs - 300 kg;
- Sell excess vegetables at retail rate during the harvest season - 500 kg;
- Grow vegetables in small amount with purposes of selling the vegetables in wholesale during the harvest - 1 to 2 tons;
- Sell small amount of own vegetables at retail rate or retailers, who purchase vegetables from wholesalers to resell at retail rate - 5 to 10 tons, there are nine retailers working at the aimag center;
- Grow vegetables in large amount and sell both in wholesale and retail at the vegetable market. Residents, who purchase vegetable wholesale in UB to resell at the local market -10-40 tons, five residents run this business;
- Grow tomato and turnips in large amount to sell them at the aimag center and in UB - 10+tons, 10 residents of Bulgan soum.

There are vegetable growers in all soums of Umnugovi aimag, though they have limited plots depending on and close to water sources. Five soums of this aimag are less active in terms of vegetable growing. Those are Mandal-Ovo \0.6 ha\, Noyon \0.8 ha\, Tsogt-Ovo \0.1 ha\, Tsogt-Tsetsii \0.1 ha\, and Hanbogd \0.3 ha\ soums.

Enterprises growing vegetables: There were 25 enterprises growing vegetables in Umnugovi in 1997. We received some information on 11 cooperatives growing vegetables and a company called Dalan Od. Dalan Od LLC is specialized with growing onion and is one of two Mongolian companies supplying the national market with onion seed.

Aimag's vegetable growers planted vegetables in 207 hectares and harvested 1,197.4 tons of vegetables in 2003.

Main vegetables grown in Umnugovi are potato, turnip, carrot, tomato, cucumber, onion, water melon and musk melon.

Problems facing vegetable growers in the aimag. Loamy soil throughout the Gobi needs much soil processing and application of fertilizers. Water source available in the aimag is usually 100-150 m deep wells. This causes huge additional expenses. Water flow in natural water sources like streams and springs depend on seasonal weather conditions and precipitation. There are limited areas for growing vegetables due to distribution of natural water sources.

Government organizations and services: There are the Food and Agriculture Department, Expert Monitoring Service, and Tax Office operating in Umnugovi like those in Dundgovi. World Vision is not operational in this aimag.

2.1.1.3. Uvurkhangai aimag

Customers: There are 109,316 residents living in 28,278 households in Uvurkhangai aimag. Some 23,716 households do not grow vegetables. There are 10,566 households living in aimag center and soum centers and 7,426 of them do not grow vegetables, whereas 16,280 out of 17,712 herder households are not vegetable growers.

Households, which enjoy a good purchasing capacity but do not grow, of both aimag center and soum centers can be considered as active users of vegetable. We can learn from example of Dundgovi aimag that herders with good purchasing capacity are in need of purchasing and using vegetables.

At the aimag level, there are the following organizations, which can be considered as main customers of the aimag vegetable market. They are hospitals with in-patient service (???), secondary schools with dormitories (???), kindergartens (???), canteens (???), hotels (???), military bases (???), tourist camps (???), ger camps (???), and a large mining camp. As of soums, at least one each of these organizations except tourist camp, ger camp, large mine and military bases, are located in each soums of the aimag. These organizations are main consumers of vegetables at the soum level.

Retailers: Arguut Meat, Vegetables and Dairy Market had been operating for a month when the consultant arrived the aimag center. There are some other vegetable retail points at the aimag center, as follow:

- 38 stalls at the Arguut Market
- A stall at the Arguut Market, which sometimes sell vegetables in wholesale
- Tiger shop
- A stall at the aimag central market.

The future of the last two points are quite dim, since Aimag Government has issued a Resolution prohibiting residents selling vegetables in places, except the new Meat, Vegetables and Dairy Market, in order to centralize the trade in those products at one point.

20 stall-owners out of 38 trading at Arguut Market and an owner of stall, who runs vegetable wholesale trade some time, grow vegetables up to 5 hectares. Their practice of purchasing and reselling vegetables is similar to that of Umnugovi traders.

Tiger shop and the retail/wholesale stall owner purchase vegetables in UB and resell them.

All soums of this aimag grow vegetables to some extent \4.2 to 2608.2 tons\ and, therefore, shops in soums sell vegetables from own soums, other soums or even from UB.

Wholesalers: - Mr Bum runs a vegetable wholesale business at the Arguut Market. He cultivated vegetables in 5 hectares and harvested 32 tons in 2003. He sells his own vegetables and those procured by him from UB to vegetable retailers and clients at wholesale rate.

Residents, who grow vegetables for sales in small amount of up to 5 tons sell their vegetables in wholesale during the harvest season.

Main location of wholesale trade is the aimag center.

Households growing vegetables: Some 4,572 households, including 3140 living in the aimag center and 432 herder households, grow vegetables in this aimag. 900 households out of them received assistance from World Vision to grow vegetables to meet their household needs for six months. The first 500 households, who started cultivating vegetables in 2003, harvested 168.3 tons of vegetables. There are households growing vegetables in all soums.

Enterprises growing vegetables: There are 84 enterprises growing vegetables throughout aimag. There is at least one enterprise growing vegetables in each soum of the aimag. Harhorin and Arvaikheer soums have the highest number of enterprises engaged with vegetables with 14 and 26 enterprises respectively. Main vegetables that grow in this aimag are potato, turnip, carrot, and cabbage. Vegetable growers cultivated in 243.5 hectares and harvested 2,142 tons of vegetables throughout Uvurkhangaï.

Government organizations and services: There are the Food and Agriculture Department, Expert Monitoring Service, and Tax Office operating alike those in Dundgovi.

Other organizations: World Vision provided assistance for 900 households in 6 soums in growing vegetables to make them capable to meet their household needs for six months.

2.1.2. Market distribution channels

2.1.2.1. Dundgovi aimag

?	Number of distribution channels			Final consumer
	1	2	3	
1	Traders at Bars Market, UB	Wholesale and retail traders		
2	Traders at Bars Market, UB	Wholesale trader	Owner of a shop at the soum center	
3	Traders at Bars Market, UB	Owner of a shop at the soum center		
4	Individuals and enterprises growing vegetables at the aimag center			
5	Enterprises and individuals growing vegetables in other aimags and selling them in an aimag center.			
6	Enterprises and individuals growing vegetables in other aimags and selling them in an aimag center.	Owner of a shop at the soum center		

2.1.2.2. Umnugovi

?	Number of distribution channels			Final consumer
	1	2	3	
1	Traders at Bars Market, UB	Wholesale and retail traders and owners of shops in soum center		
2	Traders at Bars Market, UB	Wholesale trader	Owner of a shop at the soum center	
3	Individuals and enterprises growing vegetables at the aimag center			
4	Individuals and enterprises growing vegetables at the aimag center	Owner of a shop at soum center and retail traders at aimag center.		

2.1.2.3. Uvurkhangai

?	Number of distribution channels			Final consumer
	1	2	3	
1	Traders at Bars Market, UB	Wholesale and retail traders and owners of shops in soum center		
2	Traders at Bars Market, UB	Wholesale trader	Owner of a shop at soum center	
3	Individuals and enterprises growing vegetables at the aimag center			

4	Individuals and enterprises growing vegetables at the aimag center	Owner of a shop at soum center and retail traders at aimag center.		
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Since the bulk of vegetable supply to Dundgovi is from Ulaanbaatar, and vegetables are mostly realized through stores in few soums along the road, the 1st channel presented in the table is considered to be the main channel.

For Umnugovi and Uvurkhangaï aimags, although the main supply is from Ulaanbaatar, there are also many people who grow and sell vegetables, or those who buy wholesale and sell through retail outlets, therefore for these aimags the 1st and 4th channels are can be considered as dominant.

2.1.3. Active players of the market and their working cycle

?	<i>Dundgovi</i>		<i>Umnugovi</i>		<i>Uvurkhangaï</i>	
	<i>Name</i>	<i>Active period</i>	<i>Name</i>	<i>Active period</i>	<i>Name</i>	<i>Active period</i>
1	4 wholesale points at Ikh Khaïrkhan Mandal LLC	All around the year	15 stalls at BayanUul market	All around the year	38 stalls at Arguut market	All around the year
2	2 stalls at the Food Market	All around the year	Sukhbaatar's dairy and vegetables shop	All around the year	A wholesale stall at Arguut market	All around the year
3	Talst Uul shop	All around the year	Tsogjavhlan shop	Summer and fall	A stall at the aimag central market	All around the year
4	Dulguun shop	Summer and fall	Maaalai shop	Summer and fall	Tiger shop	All around the year
5	Undram shop	All around the year	Buyan I and II shops	Summer and fall		
6	24 hours shop	All around the year	Open market at BayanUul market	During the harvesting season		

Stalls at the central market and Tiger shop may stop functioning soon since aimag Government prohibited to sell vegetables at those places.

2.1.4. Seasonal changes in the demand, supply, kinds of products, sales, profits and other indicators

?	<i>Factors</i>	<i>Winter</i>	<i>Spring</i>	<i>Summer</i>	<i>Fall</i>	<i>Comments</i>
1	Demand			Decrease		There is a sharp decrease in demand in summer, when demands of vegetables for households, schools, kindergartens and canteens are decreased. Demand goes down in the fall, as told by retailers, because consumers prefer to buy large amount of vegetables from wholesale traders to preserve vegetables.
2	Supply		Decrease		Increase	Local vegetables and vegetables brought from other aimags are sold in a large quantity in the fall. Price goes up when market runs out of reserved local vegetables and level of supply goes down.

3	Kinds of vegetables				Increase	Sales of greenhouse vegetables such as tomato, cucumber and melon as well as of vegetables that can be easily spoilt are increased.
4	Sales	Increase			increase	Price of vegetables go down sharply during the harvesting season. Price goes sharply up before the New Year celebrations.
5	Profit		Increase			Reserved vegetables can be sold at a good price.

2.2. Supply

2.2.1. Key suppliers of vegetables

?	Dundgovi		Umnugovi		Uvurkhangai	
	Name???	Supply	Name	Supply	Name	Supply
1	Individuals and enterprises growing vegetables	Vegetables are purchased and stored for three months for reselling	15 individuals working at BayanUul market	Vegetables locally grown or purchased in UB.	38 individuals at Arguut market	Vegetables locally grown or purchased in UB.
2	2 individuals working at the Food market	They procure in UB and transport from there to sell at the aimag center.	Sukhbaatar's shop	Vegetables locally grown or purchased in UB.	A wholesale trader at Arguut market	Vegetables locally grown or purchased in UB.
3	Talst Uul, Dulguun, Undram and 24 hours shops	Purchased in UB and sold in retail.	Individuals and enterprises growing vegetables. Bulgan, Dalanadgad, Bayandalai soums	Vegetables are purchased and stored for three months for reselling	Individuals and enterprises growing vegetables. Harhorin, Nariinteel and Arvaikheer soums	Vegetables are purchased and stored for four months for reselling
4	Ikh Hairhan mandal LLC	Procured in UB and sold in wholesale	Tsogjavhlan shop	Vegetables locally grown or purchased in UB.	AN individual at the aimag central market and the Tiger shop	Purchased in UB and sold in retail.

Parts that supply the markets with locally grown vegetables are written in bold letters.

2.2.2. Level of consumption of imported products by consumers. Are imported products sold well? Why?

2.2.2.1. Dundgovi aimag: 46% of residents involved in our questionnaire use vegetables of domestic origin or imported from China. It seems that majority of consumers use cheap domestic vegetables during the harvest season. 54% of interviewees prefer to use domestic vegetables all year around. A kindergarten filled out our questionnaire also prefers to use domestic vegetables. No participant of questionnaire answered that s/he uses vegetables grown in the aimag. This could be a proof of insignificant level of local vegetable production. 54% of interviewees answered that they use only potatoes and onions for their food. This answer leads to a conclusion that there is a very limited use of vegetables by local residents.

2.2.2.2. Umnugovi aimag: 70% of residents involved in the questionnaire use imported Chinese vegetables. 10% of them use only Chinese garlic, 10 % use onion from China and another 10% use

cabbage imported from the same country. This is an evidence of weak domestic production. 30% of residents interviewed prefer to use domestic vegetables and one third of them use vegetables grown in own aimag. Canteens, kindergartens and hospitals prefer to use domestic vegetables but chose imported Chinese onions.

According to aimag statistics, aimag residents used 105 tons of domestic vegetables, 100 tons of imported and 1194.7 tons of locally grown vegetables. These figures show that local residents prefer to use vegetables cultivated in Mongolia.

2.2.2.3. Uvurkhangai aimag: 38% of residents involved in our questionnaire use imported Chinese onion, carrot, cabbage and garlic, when there is a shortage in supply of domestic vegetables. 62% prefer to use Mongolian vegetables and 15% of them use vegetables grown in own aimag only. Only hospitals with store houses can keep some locally grown vegetables for their annual consumption and other organizations such as hotels, schools, and kindergartens often choose vegetables available at low price and use domestic vegetables during the harvest.

According to aimag statistics, aimag residents used 1800 tons of domestic vegetables, 1000 tons of imported and 2142 tons of locally grown vegetables.

2.2.3. Level of competition

?	Aimags	Number of Cultivated:					Imported vegetables in tons	Percentage represented in the local vegetable supply	Per person vegetable consumption /kg/
		Hou seh olds	Number of households started cultivation for the last two years	Enterprises	Area (in hectares)	Yield /tons/			
1	Dundgovi	1093	750	14	53.5	394.3	200	66	11.42
2	Umnugovi	1639	994	25	207	1194.7	205	85	29.8
3	Uvurkhangai	4572	900	84	243.5	2142	2800	43	45

Human annual vegetable consumption should be equal to 130 kg. Residents of Dundgovi consume 8% of these standard needs (including 5.8% from domestic sources), while residents of Umnugovi and Uvurkhangai consume 22.9% (including 19.6% of domestic vegetables) and 34% (including 15% of domestically grown vegetables) of the needs respectively. Vegetables are sold for residents of aimag centers in Dundgovi, Umnugovi and Uvurkhangai aimags at 7, 17 and 50 stalls respectively. There is one vegetable wholesale point each in Dundgovi and Uvurkhangai aimags.

2.3. Demand

2.3.1. Demand of imported and domestic products

?	Aimags	Aimag's yield /tons/	Imported vegetables in tons		Percentage of imported vegetables in the total supply of aimag	Quantity of vegetables per resident of aimag /kg/	Percentage of supplied vegetables in the health standards
			Mongolian	Chinese			
1	Dundgovi	394.3	200		66	11.42	8
2	Umnugovi	1194.7	105	100	85	29.8	22.9
3	Uvurkhangai	2142	1800	1000	43	45	34

Mobile vegetable sales revealed that there are needs for herders living in remote areas to purchase vegetables.

2.3.2. Do consumers prefer to buy domestically grown vegetables? If yes, which product is in their demand?

2.3.2.1. Dundgovi: 54% of residents involved in our questionnaire use domestically grown vegetables and 7% of them can not use domestically grown vegetables due to unavailability and high price. The rest of consumers prefer to use domestically grown vegetables during the harvest season, when price goes down.

Nobody from participants answered that they use locally grown vegetables. It seems this is because of low production level in the local places.

2.3.2.2. Umnugovi: 30% of residents involved in our questionnaire use domestically grown vegetables. 10% out of those 30% use vegetables grown in their aimag only. Another 10% of them prefer using locally grown vegetables, though they can afford buying the vegetables when prices are low and during the harvesting season. 30% of those answered the questionnaire use imported cabbages, onions and garlic and it is an indicator of poor local production of named vegetables.

Customers are keen to use tomatoes, cucumbers and melon grown in Bulgan soum.

2.3.2.3. Uvurkhangai: 62% of residents involved in our questionnaire use domestically grown vegetables and 15% out of them use vegetables grown in their aimag. 15% of participants prefer to use domestic vegetables but they can do so only when the price of vegetable is cheap during the harvest season.

Some 30 to 62% of all customers of those aimags use domestic vegetables regularly, however, 7 to 1% of customers prefer to use domestic vegetables but they can not do so because of high price and unavailability.

2.3.3. Key segments of the market. /location, activities and incomes/.

?	Clients	Locations	Activities
1	Residents	Aimag soum center	Employed; with household incomes worth MNT30,000-400,000
2	Canteens	In aimag and soum centers and along the main roads	
3	Schools	Aimag and soum centers	With dormitories
4	Kindergartens	Aimag and soum centers	
5	Hospitals	Aimag and soum centers	With inpatient section
6	Military bases	Umnugovi 3	Military personnel
7	Tour camps	Umnugovi and uvurkhangai	
8	Ger hotels	Umnugovi 240, ...	
9	Mines	Umnugovi, ...	Oyutolgoi, ...
10	Herders	Rural residents	Residents living remotely from settlements and gaining profits from animal products. Although they are interested in using vegetables, they can not afford buying them.

It is necessary to consider herders with enough purchasing capacity as a new market segment.

2.3.4. Kinds of products at the market. / by kind, quality and production cost/

?	Products	Quality	Cost
1	Potato	Good	AN estimated cost of MNT80-100 is spent to grow a kg of vegetable in the Gobi region.
2	Turnip	Good	
3	Red beet	Good	
4	Carrot	Good	
5	Cabbage	Good	
6	Tomato	Excellent	
7	Cucumber	Good	
8	Melon	Good	

The abovementioned cost is a sample cost of growing a kg of potato and hence I made a calculation of cost for growing potatoes in one hectare of plot, as follow: /expected yield of potatoes per hectare is 12 tons/

?	Factors affecting the price	Unit price in MNT	Quantity	Total cost	Comments
1	Use manure as fertilizer	15000	2 trucks	30000	Use two trucks of manure per hectare
2	Plough	70000	1	70000	Rental of tractor
3	Purchase of seed potatoes	250	2000	500000	
4	Planting	70000	1	70000	Rental of tractor
5	Salary of a worker	50000	5 months	250000	Collect weed, watering, caring and guarding
6	Collect the weed	1800		18000	Help fighting against weeds
7	Watering	-	Throughout the summer		Pump the water out from a depth of 100-150 meters.
8					Rental of a tractor
9	Total cost			938000	
10	Cost of a unit product			78	Production cost for 1 kg of potatoes (includes all expenses connected with planting, growing, harvesting)

This cost may arise up to MNT100 including the costs of processing the soil in the fall and watering the field using water pumps.

But growers can reduce this cost down to MNT50, if they obtain own machinery, keep seed in reserve, and by introducing watering methods using vacuum pumping technology.

- If one has own machinery, then he can use MNT10,000 for fuel and 15,000 for labor and plough the field and process the soil for planting with this much funding.
- Reserved potatoes can be used as seed and it is possible to use seeds worth MNT 200,000. /a kg of seed costs MNT100/
- Vacuum pumping technology would not use any fuel.

2.3.5. Factors affecting the price.

Residents growing vegetables make very simple and rough estimates on expenses and incomes. They fix the price of their products responding to the supply of products at the market, situation of sales and their own needs of cash money.

?	<i>Products</i>	<i>Dundgovi</i>		<i>Umnugovi</i>		<i>Uvurkhangai</i>	
		<i>Price</i>		<i>Price</i>		<i>Price</i>	
		<i>Min</i>	<i>Max</i>	<i>Min</i>	<i>Max</i>	<i>Min</i>	<i>Max</i>
1	Potato	250	450	150	500	200	500
2	Turnip	300	500	150	500	150	500
3	Red beet	-	-	-	-	400	1500
4	Carrot	300	500	300	700	180	500
5	Cabbage	250	400	300	800	220	800
6	Onion	250	500	400	1000	200	1000
7	Tomato	1000	1500	500	1500	800	1500
8	Cucumber	800	1500	200	700	800	700

The minimum prices shown in the Table are the price of vegetables sold in wholesale, when growers did not have storehouses to keep them in and when they were in lack of cash funding. As of the vegetables such as cucumber and tomato, which can be easily spoiled, as well as onions and red beets that are not grown in large quantity, their price is a winter seasonal price. Local growers are not often able to sell their vegetables at that high price. Most of the growers can not sell their vegetables at the maximum prices shown in the Table, but very few of them, who grow vegetables in large fields, can sell their vegetables at high prices.

2.3.6. Profitability

Level of profit is determined by selecting an average price out of minimum and maximum prices shown in the Table above against the cost of growing (MNT100 per kg).

?	<i>Products</i>	<i>Price in MNT</i>		<i>Profit in MNT</i>		<i>Percentage of the profit to sales price (profit margin)</i>	
		<i>Min</i>	<i>Max</i>	<i>Min</i>	<i>Max</i>	<i>Min</i>	<i>Max</i>
1	Potato	200	450	100	350	50	77
2	Turnip	270	500	170	400	63	80
3	Red beet	400	1500	300	1400	75	93
4	Carrot	240	600	140	500	58	83
5	Cabbage	250	600	150	500	60	83
6	Onion	300	750	200	650	66	86
7	Tomato	750	1500	650	1400	86	93
8	Cucumber	450	1000	350	900	77	90

2.4. Marketing experiences and needs

Growers and sellers of vegetables use the following marketing and promotional methods.

- Goviin Zun coop experimented a barter trade with rural herders to barter vegetables for animals and dairy products.
- Ikh Khairkhan Mandal LLC, which had not run any promotion, advertisement and marketing campaign, has planned to install a large advertisement board with the company's name on it.

2.5. Conclusions and recommendations

Conclusions and recommendations on research on vegetable market are written in two parts, with regards to production and market.

2.5.1. Production

- Main water source for vegetable growers is deep wells. Operation of deep wells is a costly business due to cost of fuel, power supply and container etc. Therefore, it is recommended to learn the opportunities of vacuum pumping technology and study possibilities of introducing this new technology of pumping water out of deep wells without costs of fuel and electricity.

- It is worth assisting vegetables growers in obtaining small-scale machinery. Then the growers will be able to use their land on a sustainable basis, increase their yields and decrease the production cost.
- Production cost would drop down considerably, if growers are provided with good quality seed, trainings on cultivation, and training on how to produce seed. As a result of this training, vegetable growers may set up own seed producing units. There is no guaranteed seed of elite sorts of vegetables available in the Gobi region since there is no effective structure of reserving and protecting the seed in Mongolia.
- It is necessary to push out the imported vegetables from the market by increasing the cultivation of onions, garlic and cabbages in cooperation with local vegetable growers.
- It is recommended to provide training and financial support for local growers to increase the supply of greenhouse vegetables such as tomato and cucumber in the Gobi region.
- A vital condition for increasing the vegetable production in the Gobi region and keeping the market price stable avoiding sharp seasonal fluctuation in the price is the effective use of existing vegetable storehouses and construction of new storehouses. A resident in Uvurkhangai had a project to construct a greenhouse, which can use the water from a hot spa.
- Vegetable growers should make a sound assessment of own resources (experience, finance and location), select certain type of vegetables to grow. This kind of management could bring benefits towards increasing their productivity, sales and profits. For example: if one owns a greenhouse, he should grow tomatoes and cucumbers in winter.
- Provide training and preservation of vegetables and provide participants with appropriate equipment.

2.5.2. Market

- Encourage vegetable growers to barter their products with herders thus increasing vegetable consumption by herders. Herders need to be trained how to store vegetables using simple, low-cost storage techniques. For instance, they can dig earthhouses either in their wintering places or backyards, put their vegetables and cover them with dry soil or dried manure, another way is to wrap the vegetables in felt for storing inside gers.
- Consumption and production of vegetables in the Gobi region is fairly low. Use this important opportunity to increase the production.
- Assist vegetable growers in getting linked with the market. Growers and sellers should act on the basis of a contract with regular customers. Thus the unsound situation, when growers should sell their vegetables at a low rate after the harvest and clients having no choice but to buy vegetables at a very high rate when there is a poor supply of vegetables at the market, will gradually be removed.
- There is a real opportunity for growers to increase their sales through promoting their products on the local radio and TV and other media and introducing a door-to-door service for regular customers.
- Marketing, management and technological trainings on the nature and attitude of dairy market in the Gobi region, how to work successfully on this market (how to select a right type of product, locate regular customers, how to cooperate with them etc) how to run cost-management as well as **management assistance activities** should be provided for producers and sellers.

The abovementioned marketing and management trainings should be combined with on-site practical experiments. For example: such activities as selection of the targeted market, personal meeting of participants with representatives of the market, proposal by participants to supply products, can be included in the agenda of the training.

Three. RESULTS OF DAIRY MARKET RESEARCH

3.1. Market mechanism

3.1.1. Key players at this market at the aimag and soum levels and their roles

3.1.1.1. Dundgovi

Customers: Aimag has 52,000 inhabitants living in 12,400 households. 1903 out of those households are purely non-herding people and are residents of aimag and soums' centers. A part of those households, which enjoy a good purchasing capacity and do not have relatives engaged with animal husbandry, can be considered as active customers of the aimag dairy market. According to persons met, there is no dairy trade existing at soum centers.

Residents purchase camel airag, mares' milk, sheep and goat milk and curds to some extent both for daily household consumption and for such special events as festivals, weddings and funerals. The non-daily needs mentioned here is one of main needs existing at the soum level.

However, it is likely that residents, who are not dairy producers, purchase camel milk, curds, goat milk and mares' milk.

At the aimag level, there are the following organizations, which can be considered as main customers of the aimag dairy market. They are hospitals with in-patient service (17), secondary schools with dormitories (18), kindergartens (20), canteens (28), tourist camps (???), ger camps (???), mining camps (???) and military bases (???). Besides them there is a Food Plant named Mandal Huns LLC, which produces yoghurt and an icecream workshop that uses sheep milk for its production. Those organizations are regular customers of the aimag dairy market and they purchase milk or dairy products regularly according to their own needs. As of soums, at least one each of these organizations except Food Plant, are located in each soums of the aimag. These organizations are main consumers of dairy market at the soum level.

Other organizations located at the aimag and soum centers happen to buy dairy products in a considerable amount, when they receive guests from UB and other aimags.

Retail traders: Dairy products are sold at the following points at aimag center:

Urah's dairy shop, which sells all kinds of dairy products.

- A stall at the Food market.
- Undram shop sells cow and camel milk and airag.
- There are about 10 individuals selling dairy products in the open area of Food market.

They sell sheep, cow and goat milk, airag as well as yoghurt. Sometimes they go out to places in aimag centers to sell their products. They wish to sell their products at one point, which offer a reasonable rental and meet sanitation standards.

Those sellers buy dairy products at wholesale price from rural herders and resell the products to residents of aimag center.

There are some cases that herders may stand in the market place and sell their milk by themselves.

Wholesale traders: Wholesale traders of milk and dairy products are basically herders. Herders can not sell their products at settlements at retail prices. For example: during the milking season traders from large settlements come to the herders and buy 1-2 tons of aimag at wholesale price.

During the summer milking season, only herders, who live close to aimag center, can possibly sell all of their products at the aimag market, otherwise, herders, who live in remote areas try to process the milk, produce curds and other products and sell in a small quantity, since milk can be easily spoilt during the transportation.

Customers needed to purchase dairy products for special events come to the herders and purchase dairy product from first-hand producer in many cases.

Herders with livestock: A total of 10,497 households live on livestock husbandry in this aimag, including 2,980 households herding animals at the aimag center. They produce and process dairy products for own consumption and try to sell products excessive to their household consumption at the market.

Enterprises producing and processing dairy products At the aimag level, some 29 enterprises in all soums but Govi-Ugtaal and Tsagaandelger process dairy products for business purposes and 72 organizations process dairy products as auxiliary production. 15 enterprises and 16 organizations out of them are located at the aimag center.

For example:- Mandal Huns LLC produces 70 liters of yogurt per a day and produced 15,000 ice-creams using dried milk and 3,500liters of pasteurized milk in 2003.

ToMA icecream workshop produced 21,000 ice-cream in 2003. There are another two similar workshops are operational at the aimag center.

- Mr Bayarsaikhan received some financial assistance from Gobi Initiative and purchased 5 dairy cows to establish a dairy farm. He sells 80 l of milk to Mandal Huns LLC every week.
- Oyut partnership has planned to operate a dairy bar.

There are many herders who wish to cooperate with each other and operate dairy cooperatives.

Government organizations: There are Food and Agriculture Department, Expert Monitoring Service, Tax Office and Vet Service operational in this aimag. They are said to undertake activities aimed at implementing the Government White Revolution Program, and keep a policy to increase the consumption and supply of dairy products in the aimag.

Expert Monitoring Service undertakes sanitation and health monitoring on activities of dairy product traders. The Service indeed has no capacity to provide monitoring on products' quality and standards.

Tax Office collects a monthly tax from patent holders/dairy shops. It does not collect tax from other retailers.

The Vet office takes tests from airag and milk sold by traders.

Other organizations: There is no other organization running active in Dundgovi in the dairy development sector.

Since the pattern of consumption of other Gobi aimags is pretty similar to that of Dundgovi aimag, only a brief information on number of customers, sellers and processors of dairy products in Umnugovi and Uvurkhangai aimags will be given below.

3.1.1.2. Umnugovi

Customers: Aimag has 46,858 inhabitants living in 11,633 households. 4,986 out of those households are purely non-herding people. Aimag center has 3,545 households including 3,288 non-herding families and soum centers have all together 8,088 households including 1,698 non-herding households.

There are 17 hospitals with in-patient sections, 16 schools with dormitories, 20 kindergartens, 27 canteens, 24 hotels, four mining sites including a large mine with 500 employees all together, two border troop bases and four tour camps.

Retailers: - A dairy shop belonging to Tavan Erdene Cooperative. Traders from Ulaanbaatar buy 300-500 l of camel milk at one time to transport the milk to UB, pack the milk and resell.

- Sukhbaatar's dairy and vegetable shop
- 5-10 individuals, who sell milk in the open area of Bayan-Uul market.
- There was an individual buying milk from herders and reselling it in the aimag center at retail price.

Individuals selling milk outside in the open market area and herders wish to sell their products at one point, which offer a reasonable rental and meet sanitation standards.

Wholesalers: Alike in Dundgovi aimag, herders sell their milk to retailers from aimag center.

Households with livestock: There are 6,647 households with livestock in Umnugovi. 257 out of them are located in the aimag center.

Enterprises processing dairy products:

- Icecream workshop: Jargalan/Govi Jargalan LLC/, Dambo; Simba
- Dairy farm of Goviin Orgil coop
- Bambuush yoghurt production workshop

Government organizations: There are Food and Agriculture Department, Expert Monitoring Service, Tax Office and Vet Service operational in this aimag

Other organizations: An NGO called Rural Women Development Support Fund headed by Mrs Chantsal has provided dairy processing training since 2000.

3.1.1.3. Uvurkhangai

Customers: Aimag has 109,316 inhabitants living in 28,278 households. 7,681 out of those households are purely non-herding people. The largest soums of aimag Arvaikheer and Kharkhorin have a total of 8,030 households both together 7,618 of them are non-herding families.

There are 18 hospitals with in-patient sections, 27 schools with dormitories, 26 kindergartens, 58 canteens, 24 hotels, ??? mining sites, ?? military bases and tour camps.

Retailers:

- 15 stalls at Arguut market
- 10 individuals/sellers of milk at Arguut market.

Some traders from UB come to this market and buy 1-2tons of airag from retail traders once a month in the summer.

Wholesale traders:

- Same as in Dundgovi, herders sell their products to retailers at wholesale rate.

Households with livestock: There are 20,495 households with livestock registered at the aimag level. There are 2,225 households with animals in Arvaikheer and Kharkhorin soums.

Enterprises processing dairy products At the aimag level, some 8 business enterprises process dairy products for business purposes and 13 organizations process dairy products as auxiliary production, including 3 business enterprises and an organization in Kharkhorin soum.

Government organizations: Alike Dundgovi aimag, there are Food and Agriculture Department, Expert Monitoring Service, Tax Office and Vet Service operational in this aimag.

Other organizations: Employment Support Fund in cooperation with aimag Government provided some training.

3.1.2. Market Distribution Channels

?	Number of distribution channels		
	1	2	
1	Herder		

2	Herder	Individuals selling at retail stalls and out in the street.	Final consumer
3	Herder	Traders who purchase products from herders in wholesale and resells at the aimag centers.	
4	Herder	Traders from UB purchase tons of airag and camel airag and resell the stuff back in UB.	
5	Herder	Dairy processors	
6	Traders of Food markets in UB /as of curds and packed milk/	Retail shops, stalls at the market and food shops	

1st and 2nd channels are dominant.

3.1.3. Active players of the market and their working cycle

?	????????? ?????		????????? ?????		????????????? ?????	
	Name	Period	Name	Period	Name	Period
1	Ura's dairy shop	Throughout the year	Dairy section of Tavan Erdene shop	Throughout the year	Dairy section of Arguut market	Throughout the year
2	Individuals trading in the open section of the Food market	Summer and fall	Sukhbaatar's shop	Throughout the year		
3			Open section of BaynUul market	Summer and fall		

Arguut market in Uvurkhangaig aimag center was opened in October, this year. This market was designed to centralize all sales of dairy, vegetable and meat products at one point. Many sellers protested this idea of aimag Government and did not want to move from their sales points. Then the aimag Government used police to force them move to the new market.

3.1.4. Seasonal changes occurred in demand, supply, kinds of products, sales and profits.

?	Factors	Winter	Spring	Summer	Fall	Comments
1	Demand		Increase		Increase	Increase occurs before the Mongolian New Year festivals and in the fall, when winter preparation activities are on.
2	Supply	Decrease	Decrease	Increase		Increases in the summer, decreases in winter and reaches the bottom in the spring.
3	Kinds of products	Decrease		Increase		Sheep and goat milk and some dairy products are sold well.
4	Sales		Increase		Increase	Sales go up following the demand.
5	Profit		Increase		Increase	Only total profit will increase.

3.2. Supply

3.2.1. Key suppliers of dairy products

?	Dundgovi		Umnugovi		Uvurkhangaig	
	Supplier	Soum	Supplier	Soum	Supplier	Soum
1	Herder	Uliit, Huld, Luus, Saintsagaan,	Herder	MandalOvo, Noyon, Hanbogd,	Herder	Bogd, Baruunbayan Ulaan, Btat-

		Delgertsogt, Gurvansaikhan, Tsagaandelger		Bulgan, Nomgon		Ulzii, Zuunbayan Ulaan, Uyanga.
2	Traders	UB: UB traders purchase dairy products in local places and resell them in UB when there is a shortage of packed milk, curd and other dairy products.	Traders	UB: UB traders purchase dairy products in local places and resell them in UB when there is a shortage of packed milk, curd and other dairy products.	Herder	Arkhangai
3					Traders	UB: Packed milk and sweet curds

3.2.2. Level of consumption of imported products by consumers, why imported products are sold relatively well?

3.2.2.1. Dundgovi aimag: 90% of participants in our questionnaire use only domestic products and the rest 10 % buy milk packed in Russia. A kindergarten answered to our questions uses 100 kg of aarts and 10kg of dried milk per month.

30% of customers participating in our questionnaire think that products processed by herders cannot meet sanitation and health standards in terms of processing, quality and package, while 53% of participants consider there is a very poor availability of dairy products in the aimag. Customers' preference to quality and package may cause an increase in sales of imported products in the future.

3.2.2.2. Umnugovi: 77% of participants in our questionnaire use only domestic products of own aimag. Sellers told that they were able to bring curds and packed milk from UB, curds, cream and airag from Arkhangai and Uvurkhangai and sell the products at the aimag market during the droughts and zuds in 2001 and 2002.

Kindergartens, schools and hospitals purchase milk, aarts, camel airag, cream and sour cream, according to their answer to our questions.

11% of customers participating in our questionnaire think that products processed by herders can not meet sanitation and health standards in terms of processing, quality and package, while 44% of participants consider there is a very poor availability of dairy products in the aimag, though price of dairy products is very high.

3.2.2.3. Uvurkhangai: 84% of residents involved in our questionnaire buy dairy products and 61% out of them prefer to use products produced by own aimag. Packed milk and yogurt made in Russia and Ulaanbaatar are main import products. 16% of consumers use those products when there is a shortage of local dairy products at the market.

Some kindergartens, schools, hotels and hospitals answered to our questionnaire and all of them except hotels purchase dried milk and aarts. However, Bayanbulag Hotel buys 2 liters of local milk and a liter of aarts everyday.

23% of participants answered that dairy products were not often available though expensive and 7.5% of them answered the quality of products was poor.

The main reason for consumers of the abovementioned aimags using imported and packed milk is because of the sharp shortage in supply of milk in winter and spring.

3.2.3. Level of competition

3.2.3.1. Dundgovi: The number of sellers at the aimag dairy market is limited only by one specialized dairy shop operating throughout the year and some 10 individuals selling dairy products outside at the open market. 53% of residents answered to our questions that there was a very poor availability of dairy products. It reveals that market supply of dairy product is at a very low level.

3.2.3.2. Umnugovi: There is a specialized dairy shop; another dairy and vegetable shop some 10 individuals and a few occasional herders selling various dairy products at the aimag center. There is no dairy shop at soum centers.

33% of residents answered to our questions that there was a very poor availability of dairy products. It reveals that market supply of dairy product is at a very low level.

3.2.3.3. Uvurkhangai: There are 15 stalls selling dairy products at Arguut market and another 10 individuals selling the similar products in other products. Although in terms of number of sellers, this aimag has relatively larger dairy market compared to other Gobi aimags, some 23% of residents answered to our questions that there was a very poor availability of dairy products in the aimag.

3.3. Demand

3.3.1. Demand on imported and domestic dairy products

3.3.1.1. Dundgovi. 90% of consumers use local dairy products and the rest 10% use packed milk transported from UB. Some 72% of consumers purchase milk, 18 % purchase airag, 36% of them buy yoghurt, 9% buy sour cream and 36% purchase curds on a more or less regular basis.

According to the amount of sales, dairy shops and individuals selling milk out in the streets sell approximately 54,120 kg of local milk and dairy products, whereas grocery shops sell 2,380 kg of packed milk annually.

3.3.1.2. Umnugovi: 77% of residents participating in our questionnaire have the following purchasing pattern. 77% of consumers buy milk from 2 to 10 times per month. This frequency of purchase is the same for 44% who buy camel airag, and 22% buying curds and cream. 11% of them want to use cream and 22% wish to use sour cream however, they do purchase only once or twice a year.

Some 102,840 kg of dairy products produced and processed by local herders is annually sold at the aimag market.

3.3.1.3. Uvurkhangai: 84% of residents participating in our research buy dairy products and 61% of them use local dairy products and the rest 23% use packed milk transported from UB, when there is a shortage of milk at the market. 76% of consumers buy milk from 2 to 10 times per month. This frequency of purchase is the same for 23% who buy aarts, and 15% buying curds and cream and 23% buying yoghurt. 15% of them want to use cream and 7% wish to use sour cream however, they do purchase only once or twice a year.

Some 428,400 kg dairy products produced by local herders are sold at the Arguut Market and other grocery shops sell another 20,360 l of packed milk.

3.3.2. Do consumers prefer using domestic products? If so, what is a sample product?

3.3.2.1. Dundgovi: According to sellers, local camel and goat milk, curds, camel and mares' airag are favorite dairy products for local people. However, herders sell goat milk in summer and camel curds in the fall only. Dundgovi people consider the local airag the best in Mongolia.

3.3.2.2. Umnugovi: As sellers say, local residents prefer to buy sour cream from Gурvantes soum, camel, sheep and goat milk, since Gobi residents do not usually use cow milk for making tea, instead they use camel and goat milk.

3.3.2.3. Uvurkhangai: There are such products with a good reputation among customers as airag from Ulziit and Zuunbayan Ulaan soums and sheep and goat curds from Bogd soum etc.

Results of the questionnaire and meetings with local residents show that local residents prefer using products produced in their own aimags.

3.3.3. Key segments of the market /their location, activities and incomes /.

?	Clients	Location	Activities and consumption
1	Residents	Aimag center	Households with employed members and those with regular incomes purchase dairy products for daily consumptions, special ceremonies and parties, funerals and to send some of the stuff to relatives living in UB.
2	Canteens	In aimag and soum centers and along the main roads	
3	Schools	Aimag and soum centers	With dormitories
4	Kindergartens	Aimag and soum centers	
5	Hospitals	Aimag and soum centers	With inpatient sections
6	Military bases	Umnugovi-2	Military personnel
7	Tour camps	Umnugovi and Uvrkhangai	
8	Mines	Umnugovi	Oyutolgoi
9	Organizations	Of own and other aimags	For special events and festivals, guest and own officials.
10	Changers from UB	UB	To resell in UB; with purposes of packing the airag, camel airag and sour creams in industrial conditions and sell in UB.

It is necessary to consider herders with enough purchasing capacity as a new market segment.

3.3.4. Products at this market. /by kind, quality and cost of production/

The key producers of dairy products in the Gobi region are herders. They have never estimated their time and labor spent on taking care of their animals and processing dairy products. Here we can see only amounts of mil used to produce certain kind of dairy products in the Table below. To calculate the cost, the minimum price of milk is taken as exemplary.

?	Products	Measuring unit	Milk used (l)	Price per liter of milk		By-products		
				Min	Max		Cost	price
1	Camel airag or fermented milk	L	1	500	800	-	500	700-1000
	Camel sour cream	Kg	3.5	500	800	-	1750	1800-2500
2	Camel curs	Kg	10	500	800	-	5000	3000-5000
3	Yak cream	A pot which can contain 10 l of milk	10	400	500	0.75 kg of curd	3100	1500
4	Yak yogurt	L	1.25	400	500	-	500	500
5	Yak sour	Kg	3.5	400	500	-	1400	500

	cream							
6	Yak butter	kg	40	400	500	3 kg of curd and 1 kg of <i>khailmag</i>	11600	2800
7	Sour cream contained in a processed sheep stomach	Kg	20	400	500	1.4 kg of curds	6320	1500
8	Airag	L	1	500	600	-	500	500-600
9	Sheep and goat cream	?????	10	500	800	0.75 kg of curds	3125	1200-1500
10	Sheep and goat curds	Kg	10	400	500	-	4000	2000-2500
11	Butter from sheep and goat milk	Kg	40	400	500	3 kg of curds and 1 kg of <i>khailmag</i>	7700	1000-1500
12	Sheep and goat sour cream	Kg	20	400	500	1.5 kg of curds	4.25	2000-2500

Such by-products as cow curds, sheep curds and *khailmag* are calculated to be sold for MNT1,200, 2,000 and 800 per kg respectively.

The standards of milk input for producing certain products are used as follow: 10 l of milk are used for producing 3 kg of sour cream, 3 kg of sour cream for producing 1 kg of curds, 10 l of milk plus a pot (10 l) of cream are used to produce 8 l yoghurt and 2 kg of cream plus 1 kg of butter are used to make 1 kg of *khailmag*.

2.3.5. Price and factors affecting it.

Herders offer their price depending on market price, situation of supply, and needs of cash money. This price still is not the one based on real cost of production and profit.

?	Products	Dundgovi		Umnugovi		Uvurkhangai	
		Price		Price		Price	
		Min	Max	Min	Max	Min	Max
1	Camel milk	700	1000	400	600	500	800
2	Camel airag	700	1100	500	800	900	1000
3	Camel sour cream	-	-	1800	2500	2000	2500
4	Camel curd	3000	3500	3000	5000	3500	4000
5	Yak and cow milk	400	450	-	-	200	600
6	Yak and cow cream	1200	1500	-	-	1500	-
7	Yoghurt from yak and cow milk	-	-	-	-	-	-
8	Yak and cow sour cream	-	-	-	-	500	600
9	Butter from yak and cow milk	2000	3000	2500	3500	2800	3000
10	Curds made by yak and cow milk	1200	2000	-	-	1000	1200
11	Sour cream contained in processed sheep stomach	-	-	-	-	1400	1500
12	Airag	500	1000	-	-	500	600
13	Sheep and goat milk	350	800	300	500	-	-
14	Cream from goat and sheep milk	1200	500	-	-	-	-
15	Goat and sheep curds	2500	3000	1500	2500	1800	2200

16	Butter from goat and sheep milk	-	-	1000	1500	-	-
17	Sour cream from goat and sheep milk	2000	2500	1500	2500	-	-

2.3.6. Profitability

The real profits gained by herders have not been determined but traders resell all types of dairy products with profit of MNT200 to 300 above the unit price. However, there are some specific nature of sales depending on the type of products, as follow:

- Traders resell milk and airag with a profit of MNT100 per liter.
- Cow butter and camel curd are sold with profit of MNT500 per kg in Dundgovi, while cream in Umnugovi can be sold with profit of MNT500 per kg in Umnugovi.

In other words sellers fix the rate of profit depending on the availability, supply, and place of procurement of given product.

2.4. Marketing experience and needs

Currently, the only thing that dairy producers and traders do in the marketing area is to have small shops named “Dairy products”, and they do not engage in any promotion and other marketing activities.

2.5. Conclusions and recommendations

The following are conclusions and recommendations with regards to increasing the production and sales of dairy products.

- Each aimag should develop certain type of product using the experience of producers and reputation of the product created over the past. For example: Herders in Dundgovi could increase the production of airag and market it in neighboring aimags and Ulaanbaatar, while residents of Gurvan Tes soum of Umnugovi aimag may focus on production of sour cream and try to sell their products in the aimag center and Ulaanbaatar. New forms of technology and marketing should be introduced so that herders of Bogd soum, Uvurkhangai, for example, can produce sheep curds and cow cream in a large quantity and residents of Umnugovi may concentrate on production of camel airag and selling their products at other aimag centers and in Ulaanbaatar.
- Main suppliers of milk for the aimag centers are residents of 4 to 5 soums adjacent to aimag centers. That is why the supply level is low. Residents of remote soums do not often come to the aimag center with their products, because their products face a high risk of getting spoiled before reaching the aimag market. Therefore, residents of remote soums should select the right type of products they could produce with the view of marketing them at the aimag market. Herders living in remote soums may produce such products as curds, which are not easily spoilt during the transportation.
- Herder groups in remote soums should work together and appoint a sales manager, who can represent them.
- Create a system of barter trade so that herders can barter their dairy products for vegetables, for example.
- Herders should learn the knowledge on how to process the dairy products up to appropriate standards in household conditions, since the demand for pasteurized and packed milk will grow.
- There should be some sales points at the aimag centers for herders to come to the aimag center with own products and sell their products on their own. Such points should be created in Dundgovi and Umnugovi aimags and in Arguut market at Uvurkhangai aimag center. This situation will cause certain negative impact on retail traders, though this way the supply of products will be increased. The sales points may be open on certain days a week.

- Organize some activities to link the herders and herder groups with regular customers and supply the dairy products on a contract basis, involving all the customers.
- Provide dairy processing trainings for herders and assist them in obtaining equipment for them..
- Carry out activities aimed at improving the quality of dairy animals. Herders who wanted to sell some of their animals in order to buy a elite dairy animals can join together and Gobi Initiative can assist herders in purchasing dairy animals in an organized way.
- Marketing, management and technological trainings on the nature and attitude of dairy market in the Gobi region , how to work successfully on this market (how to select a right type of product, locate regular customers, how to cooperate with them etc) should be provided for herders and sellers.

Marketing and management trainings should contain some practical components. For example: such activities as, to make selection on the targeted market, personal meeting of participants with representatives of the market, proposal by participants to supply products, can be included in the agenda of the training.

Four. CONCLUSIONS AND RECOMMENDATIONS

Herders and rural residents are recommended to share their labor and assets, cooperate with each other as business entities and receive financial, management and technological assistance, in order to implement the proposed activities.

It is considered that assistance provided for herders and rural residents should be undertaken under a well-developed consolidated policy and planning. In many cases, series of trainings on processing of dairy products had been provided for rural residents, however, there was no equipment for them to prove their knowledge in practice. I think this kind of training will bring a very little output. Dairy processing equipment may have sold to herders and rural residents at a rate with or without discount or as a loan. Any training on product processing may bring maximum benefit if it is somehow connected with availability of certain type of equipment for participants to use their theoretical knowledge for their practical business.

There is a number of individuals and enterprises, who had developed certain plans for development of dairy and vegetable sectors, and it could be worth implementing activities to support them. List of those individuals and enterprises is attached to this Report.

It is recommended to develop and implement a consolidated policy and plans for dairy and vegetable sectors' development, in order to realize the abovementioned proposals.

As mentioned before, there is a real opportunity for market development in the areas adjacent to Oyutolgoi mining site. The example how it could grow is Erdenet city and Erdenet mining complex. And we know that Oyutolgoi has even more resources compared to Erdenet. The population of Erdenet city is 80000, and Erdenet mining employs 6000 people. Therefore, we need to do further research on the possibilities that Oyutolgoi may create.

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Individuals and enterprises planning to implement
activities to develop vegetable and dairy sector

Dundgovi aimag			
Names		Activities planned	
Goviin batbold, Head Director	Zun Huns LLC, Myagmar, Cooperative, Mr	The coop is cultivating vegetables in one hectare and is going to expand its cultivation area. Planned to pack camel airag and market its products.	
Umnugovi			
Names		Activities planned	
Tavan Erdenetseseg, Director	Mr Sukhbaatar	Coop,	Runs a small dairy stall. Planned to build up a dairy shop. Needs in loans. Grows vegetables in 2.5 hectares in a place called Dalan. People used to grow vegetables in 30 hectares in Dalan. Now 14.5 hectares are available for cultivation. Dalan was a small pond to collect rain water. Cultivated are ahs been dropped since the pond is filled with mud. It is worth clean the pond. A funding of MNT50million is needed to clean the pond, as locals say.
Oyut Director.	Partnership, Maamhuu,	Planned to produce beverage from casein, champagne and some bakery stuff. It is developing a business plan to cooperate with tour camps, establish dairy restaurant and café. Needs support.	
Uvurkhangai			
Name		Planned activities	
Uguuj soum	chandmani coop, Tugrug	Owns two simmenthal cows and a bull. Planned to produce packed milk.	
Bayan ulegt coop, Hujirt soum.		Cultivated vegetables in four hectares. Planned to bring into operation an Airag Treatment Sanatorium.	
Molor LLC, Hujirt soum		Planned to produce Hujirt White Curds.	
Urjin devshih partnership		Own 10 dairy cows. Plans to purchase more dairy goats, mares and chickens. Plans to operate a small ice-cream workshop. Furthermore, it plans to rehabilitate production of cream in Uyanga soum and Delgereh Food plant in aimag center.	